Digital Weighing Indicator

CE
Approved for Digital
Weigh Indicator

INNOBIZ

MI-800 Series User Manual

For MI-810 / MI-830 / MI-850 model

MiGun ST Co.,LTD
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Chapter 1. Preface

1. Introduction

This MI-800 series Digital Weighing Indicator(MI-810/830/850) model is 1/8 din size powerful performance for the industrial weighing system application.

RS-232 serial port can be expended up to 4pots, easy to connect with other devices and PC.

In case of MI-830/850 model has 3pcs control relay output as a standard and also MI-850 model has sub-display window, easy to make weighing automation system.

Please estimated this user manual and enjoy the performance of MI-800 series digital weighing Indicator.

2. Feature

2-1. Isolation from the external noise
2-2. Watch-dog function
2-3. Display resolution, up to 1/30,000
2-4. 2pcs Digital input terminal built in (Zero, Tare/Reset)
2-5. DC 12V~24V power supply. (Without Polarity)
2-6. Data back-up function
2-7. Full Automatic Calibration method
2-8. Simulating Calibration Method (without Span weight)
2-9. Option : Rs-485 / Rs-232(extra) / 4~20mA or 0~10V output

3. Caution

3-1. Weak for the drop damage or physical shock.
3-2. Do not install heavy electric noise place.
3-3. Do not install the heavy vibrating place.
3-4. Avoid from the humidity or rain damage.
3-5. Please Turn off the main power, when make connect with other devices.

4. Accessories

4-1. User Manual

5. Inquiries

If you have any kinds of inquiries for this model, please contact with your local agent or Head Office.

Head Office : Migun ST co.,Ltd.
Overseas Office : Migun Corporation.
Website : http://www.miguncorp.co.kr
Email : info@miguncorp.co.kr / sales@miguncorp.co.kr

Chapter 2. Specification

1. Analogue Input and A/D Conversion

Input Sensitivity	0.3㎶ / Digit
Load Cell Excitation	DC 10V (- 5V ~ + 5V)
Max. Signal Input Voltage	Max.32mV
Temperature Coefficient	[Zero] ±10PPM/℃ / [Span] ±10PPM/℃
Input Noise	±0.6㎶ P.P
Input Impedance	Over 10㏁
A/D Conversion Method	Sigma-Delta
A/D Resolution(Internal)	520,000 Count(19bit)
A/D Sampling Rate	Max. 200times / Sec
Non-Linearity	0.01% FS
Display Resolution(External)	**1/30,000**

2. Digital Part

Display	Parts	Specification
Display	Main Display	7Segments, 5 Digit RED FND Display Size :12.7mm(H)×7.3mm(W)
	Min. Division	×1, ×2, ×5, ×10, ×20, ×50
	Max. display value	+99,950
	Under Zero value	"-" (Minus display)
	Sub-Display (**Only MI-850**)	7Segments, 5 Digit RED FND Display Size :8.0mm(H)×4.0mm(W)
Status lamp	**MI-810 model** Zero, Stable, TARE, AUTO, PRINT, Hold, RTxD	Green LED Display(3Ø)
	MI-830 / 850 model Zero, Stable, Low, High, END, Hold, RTxD	
K e y	Function keys	Zero / F / Set / Enter (4pcs function keys)

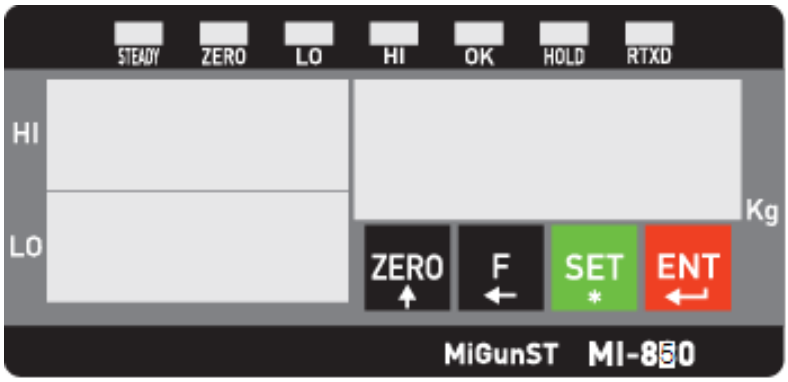
3. General Part

Power Supply	DC 12~24V / About 200~300mA
Operating Temperature Range	-5℃ ~ 40℃
Operating Humidity Range	Under 85% Rh (non-condensing)
External Dimension	100mm(W) x 52mm(H) x 125mm(L)
Net Weight(kg)	About 450g
Gross Weight(kg)	About 600g

4. Option

Option No.1	RS-422
Option No.2	RS-232 (Standard Installation)
Option No.5	4~20mA (Analogue Output)
Option No.6	0~10V (Analogue Output)

5. Front Panel Display



5-1. Weight Display

- Current Weight value will be Display
- In case of MI-830 model, display set value, whenever press key.

5-2. Status Lamp (From Left to Right) – **MI 810 model**

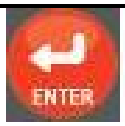
- Steady : Lamp is “ON”, when the weight value is stable condition.
- Zero : Lamp is “ON”, when the weight value is Zero(including Tare weight)
- Tare : Lamp is “ON”, when the TARE function is activated
- Auto : Automatic Print Function is Activated, Lamp is “ON”
- Print : Lamp is not use due to the MI 800 series model has not a print mode and function.

- Hold : Lamp is “ON”, when the Hold function is activated
- RTxD. : Lamp is “ON”, when the Comm. is activated

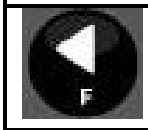
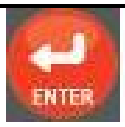
5-3. Status Lamp (From Left to Right) – **MI 830 / 850 model**

- Steady : Lamp is “ON”, when the weight value is stable condition.
- Zero : Lamp is “ON”, when the weight value is Zero(including Tare weight)
- Low : Lamp is “ON”, when the weight value reaches to “Low set value”.
- Hi : Lamp is “ON”, when the weight value reaches to “HI set value”.
- END(OK) : Lamp is “ON”, when the single weighing Batch is finished.
- Hold : Lamp is “ON”, when the Hold function is activated
- RTxD(TxD). : Lamp is “ON”, when the Comm. is activated

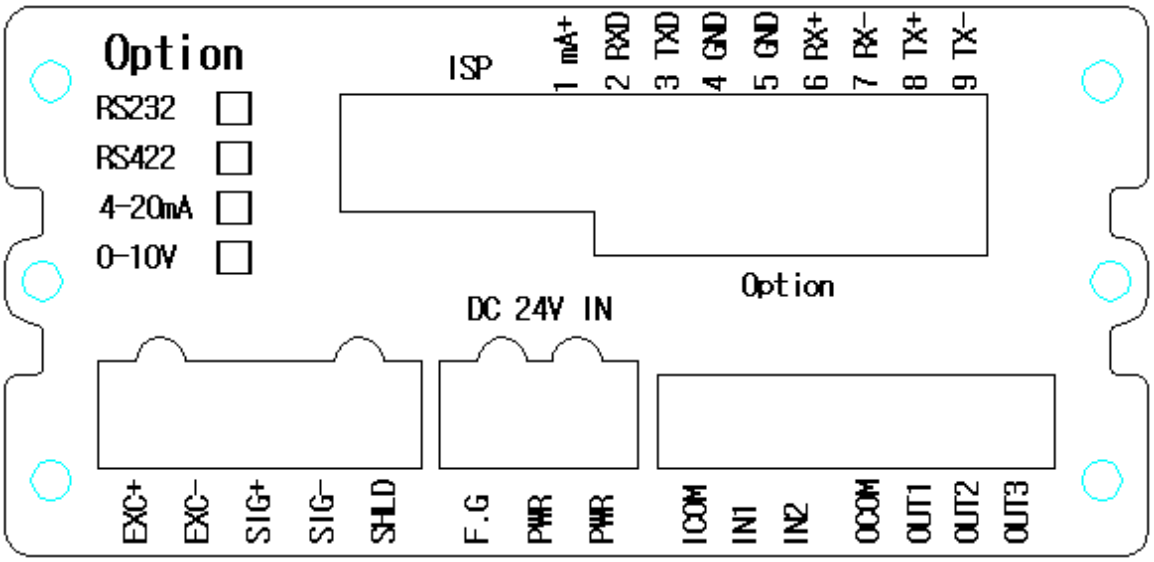
6. Key Pad (Basic Function)

Zero	Make current display value to Zero (within the Range) - F08 function setting check
Function	Set / Reset “TARE” function. - F09 function setting check
Set	**MI-810 model** Part No./ Code / Serial No. / Auto print or Manual Print Mode **MI-830 / 850 model** Low set value or HI set value check or change.
 Enter	Save new set value

7. Hot key function

Zero	1. Increasing the set value 2. Exit for the “Set-Cal” condition
 Function	1. Move the display position 2. Move the “TEST mode” from “SET-CAL” mode
Set	1. Increasing the Function No. under Function setting mode 2. Enter to “Function mode” from “SET-CAL” mode
 Enter	1. Start Calibration mode, under “SET-CAL” mode **- Press this key during 7sec. → Enter to SET-CAL mode.** 2. Save new set value and move next step

8. Rear Panel



8-1. Load Cell Terminal : EXC+ ~ SHLD

8-2. Earth : F.G of DC 24V IN

8-3. Power input : PWR of DC 24V IN (without Polarity / No positive and negative)

8-4. Digital input : ICOM, IN1 and IN2 (Function 11 check)

8-5. Relay output : OCOM, OUT1 ~ OUT3 (Function 21 check – only for MI-830/850 model)

8-6. Option : Analogue Output (4~20mA or 0~10V) —> No. 1 (mA+) and No. 4 or 5 (GND)
RS-232C —> No. 2~4 (RXD, TXD, GND)
RS-422 —> No. 5~9 (RX+, RX-, TX+. TX-)

Chapter 3. Installation

1. External Dimension

2. Panel Cutting Size

Chapter 4. Calibration

1. SPAN Calibration

- Adjust weight balance between “Real weight” on the load cell(Weight Part) and “Displayed weight of Indicator”. When you replace LOAD CELL or Indicator, you have to do Calibration process once again

- Applicable model : MI-700 / 800 series

Prepare at least 10% of Max. capacity of your weighing scale.

Step 1. Enter to the “SET-CAL” mod

Pressing ENTER key during 5sec. then display will show SET-CAL.

Or turn on the Power + with pressing ENTER → SET-CAL display.

Press ENTER key → CAL_ 1 display. Press ENTER key to start “Calibration Mode”.

Remarks : Go to next step with save ENTER key / Back to previous step SET key

Step 2. Digit/Division setting

- Whenever pressing

key, digit value will be increased as 01-02-05-10-20-50.
- Whenever pressing

key, digit value will be decreased as 50-20-10-05-02-01.
- Press

key to save new set value and move to next step.

※ If you want to exit this mode, press

key.

Step 3. Max. Capacity setting

- Determine the Max. capacity of your scale.

Whenever pressing

key, value will be increased, Whenever pressing

key, you can move to the left digit

※ Move to previous step, press

key

Then, Press

key to save new set value and move to next step.

Remarks

- The Max. capacity cannot be exceed Max. capacity of load cell.
- (Digit/Max. Capacity) value must be less than 1/20,000.

Step 4. Measure/Adjustment optimal Zero balance of Scale

- Press

key to measure and adjustment Zero balance of Scale.

※ Before press

key, please make clear on the scale part.

Step 5. Input Prepared Test weight value and load on the Scale.

- Then display will show SPAn and then, input prepared test weight value whenever pressing ZERO key, value will be increased, Whenever pressing F key, you can move to the left digit

- Press ENTER key, value will be saved.

- Then display will show C_UP_ and then, load prepared test weight unit on the scale.

※ Move to previous step, press

key.

- After a few seconds (to remove the vibration effect), press

key.

Then, indicator will calculate Span value and move the next step.

Remarks : - Please prepare at least 10% of Max. Capacity.

Step 6. End Calibration and Auto Reset

- Calculated Span value will be displayed and automatically reset and move the normal weight indicating mode.

2. Simulating Calibration (Without Test Weight)

- Applicable model : MI - 800 series

- This calibration Method will be useful to make calibration more than 10ton capacity setting.

- Guaranteed resolution will be 1/5,000 and if you need higher resolution, please make calibration with Test weight.

Step 1. Enter to the "SET-CAL" mode

Pressing

key during 5sec. then display will show SET-CAL.

Then Press

key and enter to Simulation Calibration Mode with CAL._2.

Step 2. Digit/Division setting

- Whenever pressing

key, digit value will be increased as 01-02-05-10-20-50.
- Whenever pressing

key, digit value will be decreased as 50-20-10-05-02-01.
- Press

key to save new set value and move to next step.

※ If you want to exit this mode, press

key.

Step 3. Max. Capacity of Load cell

- Under this step, input Total sum of each load cell's Max. Capacity. (Not weighing Scale)
- The Max. Capacity of load cell is stated on **"Test report"** or **"Label"**.

- If you installed 4 load cells, and each load cell's Max. Capacity is 500kg, then you have to input 2,000kg, as a Max. Capacity.

- Whenever pressing

key, value will be increased

- Whenever pressing

key, you can move to the left digit

- Move to previous step, press

key

- Press

key to save new set value and move to next step.

Step 4. Measure/Adjustment optimal Zero balance of Scale

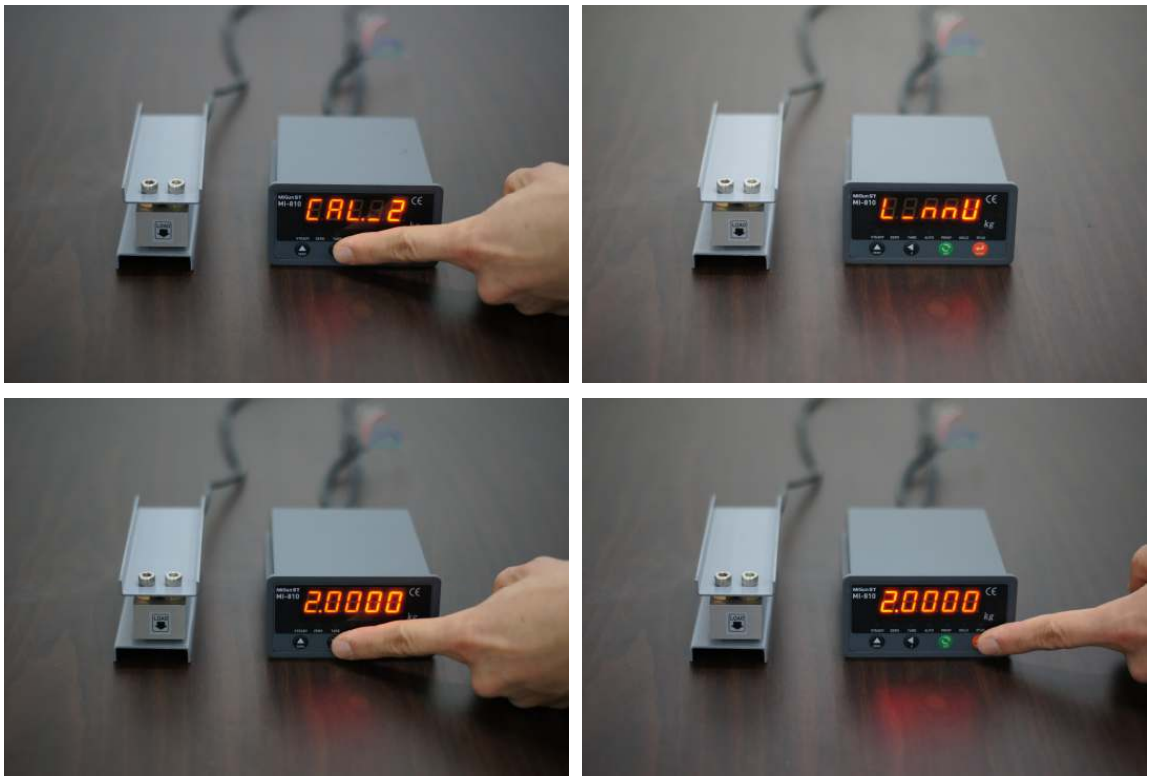
- Press

key to measure and adjustment Zero balance of Scale.

※ Before press

key, please make clear on the scale part.

Step 5. Input Max. Output rate(mV/V) value of load cell



- Under this step, input Max. Output rate(mV) of load cell.
- If you installed a few pieces of load cells, the connection will be parallel, so the rated output of a few load cells are as same as single load cell's rated output.
- The Output rate is stated on "Test report" or "Label"
- Whenever pressing

key, value will be increased
- Whenever pressing

key, you can move to the left digit
- Move to previous step, press

key
- Press

key to save new set value and move to next step.

Step 6. End Calibration and Auto Reset

- Calculated Span value will be displayed and automatically reset and move the normal weight indicating mode.

Chapter 5. Set-Up

1. Set-Up

Set-up means set the F-function and make MI-800 series weighing controller will perform more accuracy. (Considering external / internal environmental condition)

2. Enter to Set-up mode

- Applicable model : MI – 800 series

To make more accuracy performance of Digital Weighing Indicator, through this Function setting.

Turn on the Power + with pressing

→ SET-CAL display.

Press

key to start “Function Mode”.

Step 2. Change Function No.

Whenever pressing

key, function No. will be increased.

(Increase up to “01-53” and return to “01-01”)

Stop increase at the desired function No., press

key.

If you press

key, current set value will be saved.

If you press

key one more, back to the “ST.CAL” mode.

Step 3. Change New set value for each Function No.

At the function No. display, input new set value with

key and

.

Press

key to save new set value.

If you don’t press

key, new set value will not be saved.

Step 4. Exit Function Mode.

After save new set value with pressing

key, then press

key to Function mode.

To Exit Normal mode, press key.

Chapter 6. F-Function List

1. F-Function List

General Function Setting		
F00	**Set-up & Calibration Selection**	With and key
F01	**Decimal Point setting**	0 / 0.0 / 0.00 / 0.000
F02	**Back up Mode**	Normal / Back up
F03	**MOTION BAND Range setting**	0~9
F04	**ZERO TRACKING Range setting**	0~9
F05	**Auto Zero Range setting**	00 ~ 99
F06	**Digital Filter setting**	01 ~ 49
F07	**"Zero/Tare" key Operation mode select**	0, 1
F08	**"Zero" key operation range selection**	0, 1, 2, 3, 4
F09	**"Tare" key operation range selection**	0, 1, 2, 3
F10	**"Hold" Mode selection**	0, 1, 2
F11	**External input selection**	0, 1. 2, 3, 4
F12	**Key pad setting**	0, 1, 2, 3, 4
F13	**Code No. setting**	0, 1, 2
F14	**Hold Off time setting**	00~99

Relay Output Mode setting (Only for MI-830/850 model)		
F21	**Weighing Mode Selection**	0, 1, 2, 3, 4, 5
F22	**When use Weighing Mode 1 & 2, Comm. Output delay time**	00~99
F24	**Weighing Judge Relay "ON" delay time**	00~99
F25	**Weighing Judge Relay "ON" duration time**	00~99

Communication Mode setting		
F30	**Parity Bit selection Mode**	0, 1, 2
F31	**Serial Communication Speed selection**	0 ~ 9

F32	**DATA Transference Mode selection**	0, 1
F33	**DATA Transference Method selection**	0, 1, 2, 4
F34	**Equipment No.(ID No.) Selection**	1~99
F35	**Data Format**	0, 1
F36	**BCC selection**	0, 1
F37	**Data Transference count setting**	0~6
F40	**Weight Unit selection (Communication)**	0: kg, 1: g, 2: ton
F53	**Average Value display selection**	0 : not use / 1~99 : use
F54	**Steady LED Status Lamp Delay time setting**	0: Not use, 1: Use
F55	**Tension and Compression setting**	0: Not use (JP 1 OFF) 1: Use (JP 1 ON)

Other setting		
F80	**Empty Range setting**	X X X X X X
F81	**Zero display Range setting**	X. X X X X X
F82	**Zero Deduction Value setting**	XX. XX. XX
F83	**Max. Analogue output value setting**	XX. XX. XX
F85	**Simulating Calibration Standard value**	XX. XX. XX
F89	**Calibration Span value check**	X.XX X.XX. X

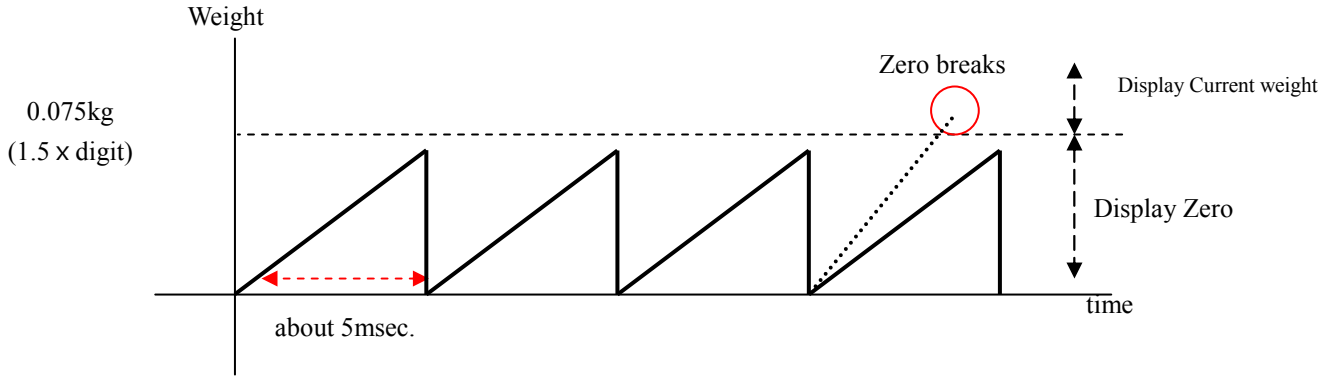
2. F-function Details

Set-up & Calibration Selection			
F00	key : Move to Set-up mode	key : Move to Calibration mode	
Decimal Point Setting			
F01		0	No Decimal Point
		1	1point under Zero
	●	2	2point Under Zero
		3	3point Under Zero
Weight-Back up selection			
F02	●	0	Normal Mode
		1	Weight Back up Mode

Motion Band Range			
F03	5	0~9	This is set "Steady" acceptable range of weighing part. If there is vibration on weighing part, you can set this function and reduce the vibration effect on weighing process. 0 : Weak vibration ∫ 9 : Strong Vibration

Zero Tracking Compensation Range setting			
F04	5	0 ∫ 9	Due to external causes(Temperature, wind, and dust), there are small weight difference, indicator will ignore the weight difference and display Zero. For this compensation function, indicator will estimate the weight difference is over the set range during fixed time period. If there is large weight difference over set range within fixed time period, the "Zero" is breaking and will find new zero point.

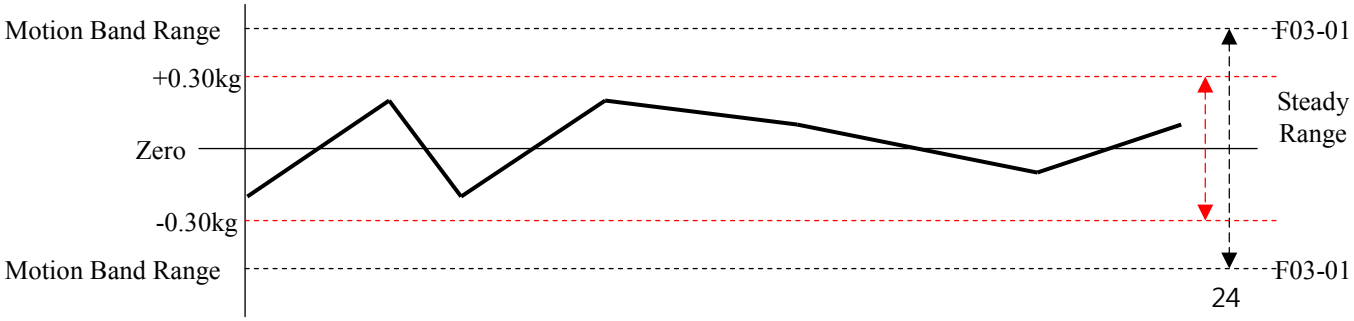
Example) Max. Capacity : 100.00kg, Digit : 0.05kg, F04-03 setting
Zero Tracking Compensation Range : 0.5 x digit x F04 set value = 0.0025 x 3 = **0.075kg**
Fixed time period : about 5msec. (Fixed time period will be effected on F06(digital filter) setting)



Auto Zero Range setting			
F05	00	00 ∫ 99	Within the "Auto Zero" range, weighing part is steady, indicator will display current weight as "Zero" If the weighing part is not "Steady", indicator will display current weight. (Auto Zero Range : ± Set value + weight unit)

※ Using this function, you can get the Zero value without pressing "Zero" key, when there is remained material in the hopper within Auto Zero Range.

Example) Max. Capacity : 10kg, Digit : 0.02kg, F005-30 setting,
Under this setting, Indicator will display "Zero" automatically, when the weight is within ± 0.30kg(Set value + weight unit) and Steady.



Digital Filter setting				
F06	15	01 ~ 49	A : Frequency Filter setting value (0~3) (0 : about 200Hz/sec, 1 : about 500Hz/sec) B : Buffer Filter setting value (1~9)	If “B” set value is fixed, “A” set value is large, the indicator will response more sensitive.

Zero /Tare key Operation mode selection			
F07	●	0	Activate when “Steady” condition, only
		1	Always activated

Zero key Operation Range selection			
F08		0	Activated within 2% of Max. Capacity
		1	Activated within 5% of Max. Capacity
		2	Activated within 10% of Max. Capacity
	●	3	Activated within 20% of Max. Capacity
		4	Activated within 100% of Max. Capacity

Tare key Operation Range selection			
F09		0	Activated within 10% of Max. Capacity
		1	Activated within 20% of Max. Capacity
		2	Activated within 50% of Max. Capacity
	●	3	Activated within 100% of Max. Capacity

“Hold” Mode selection			
F10	●	0	Peak Hold : Measure Max. weight value and hold on display.
		1	Sample Hold : Hold current weight until “Hold Reset”.
		2	Average Hold : Make Average during 5sec and “Hold Display”.

External Input Selection – MI 810 model				
F11	**Set Value**		**Input 1**	**Input 2**
		0	TARE	TARE RESET
	●	1	ZERO	TARE/RESET
		2	HOLD	HOLD RESET

External Input Selection – MI 830 / 850 model				
F11	Set Value		Input 1	Input 2
		0	RUN	STOP
		1	RUN/STOP	TARE / TARE RESET
		2	ZERO	TARE / TARE RESET
	●	3	HOLD	HOLD RESET
		4	TARE	TARE RESET

Key Pad Setting – MI 810 Model						
F12	Set Value					
	●	0	ZERO	TARE/RESET	SET	HOLD/RESET
		1	ZERO	HOLD	SET	HOLD RESET
		2	ZERO	TARE	SET	TARE RESET

Key Pad Setting – MI 830 / 850 Model						
F12	Set Value					
	●	0	Zero	Tare/Reset	SET	Hold/Reset
		1	Zero	Hold	SET	Hold Reset
		2	Zero	Tare	SET	Tare Reset
		3	Zero	Run	SET	Stop
		4	Zero	Run/Stop	SET	Hold/Reset

Code No. Setting			
F13	●	0	Fixed Code
		1	Increase one by one, whenever finish the batch
		2	Decrease one by one, whenever finish the batch

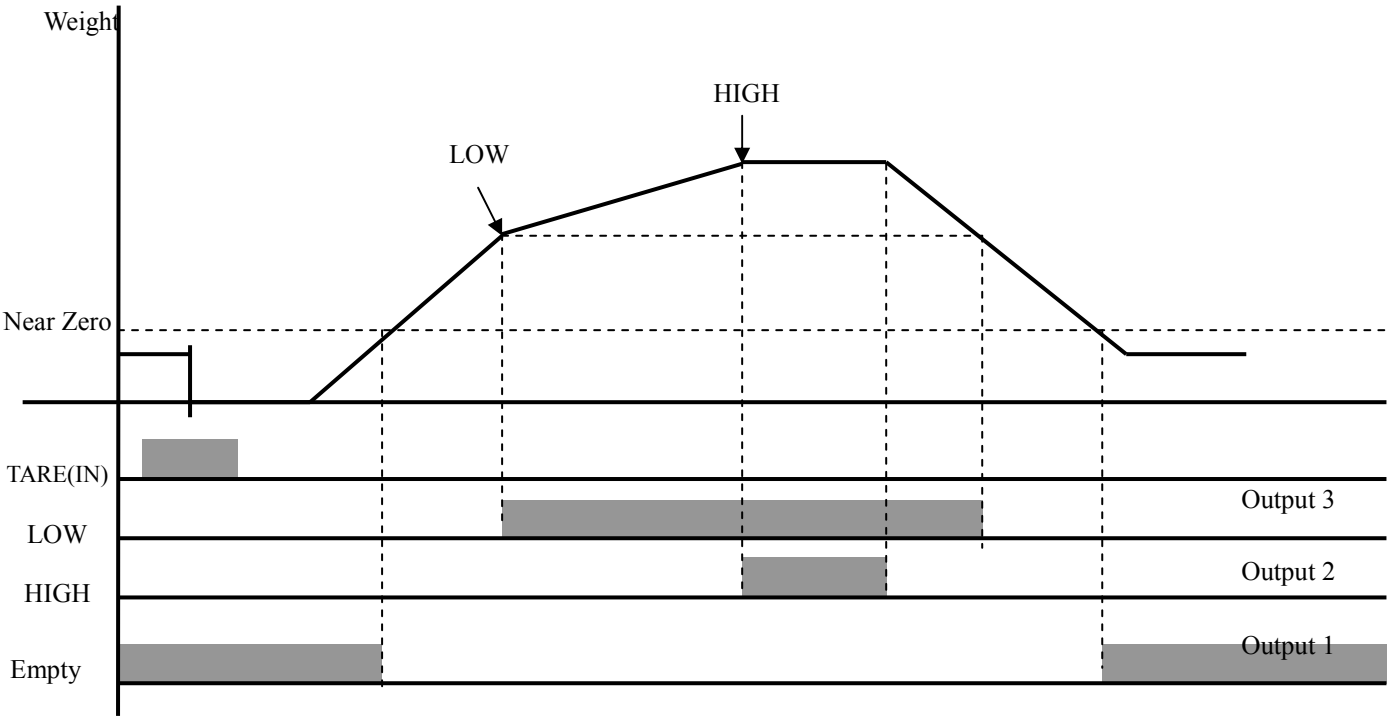
Hold Off time setting (only for F10-1/2 setting)			
F14	00	00~99	0.0sec ~ 9.9sec : Hold function will be off

■ **Relay Output Mode Setting – only for MI-830 / 850 model**

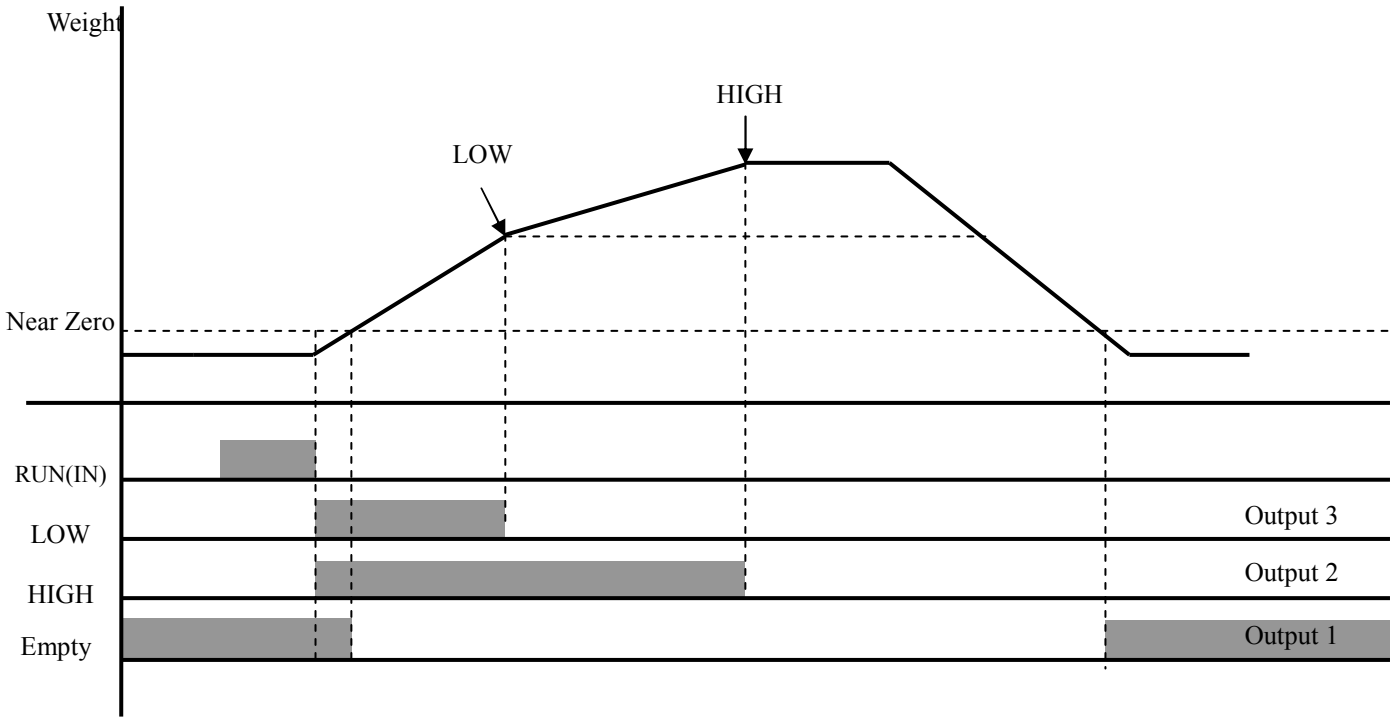
Weighing Mode selection			
F21	●	1	Normal Batch – Limit
		2	Programming Batch – Packer
		3	Comparison 1. (Checker 1)
		4	Comparison 2. (Checker 2)

Relay output Mode(Each weighing Mode)				
Weighing Mode		**Output 3**	**Output 2**	**Output 1**
1	Limit	SP1(Low)	SP2(High)	SP3(Empty)
2	Packer	SP1(Low)	SP2(High)	SP3(Empty)
3	Checker 1	SP1(Under)	SP2(Over)	SP3(Pass)
4	Checker 2	SP1(Under)	SP2(Over)	SP3(Pass)

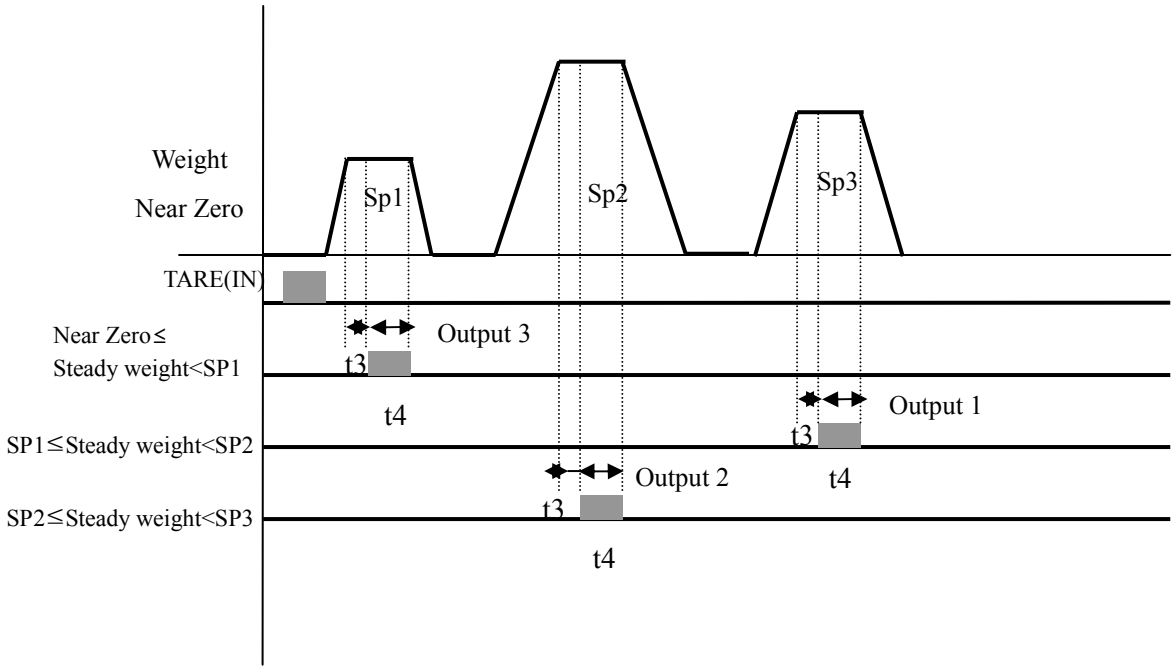
◆ Weighing Mode 1. Limit Mode



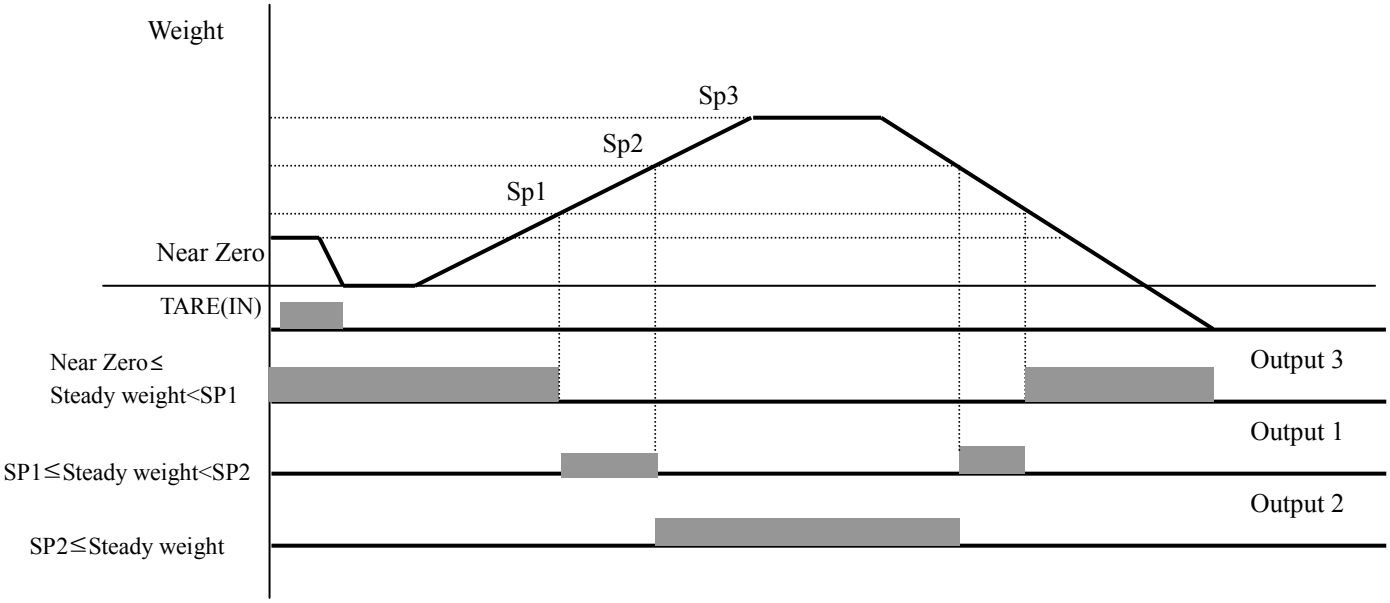
◆ Weighing Mode 2. Packer Mode

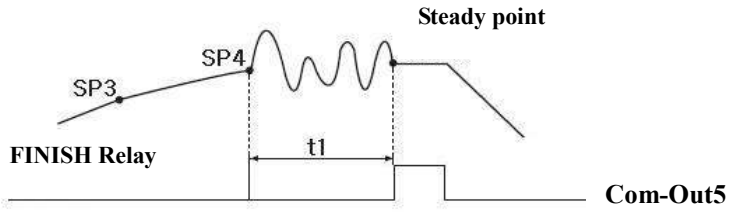


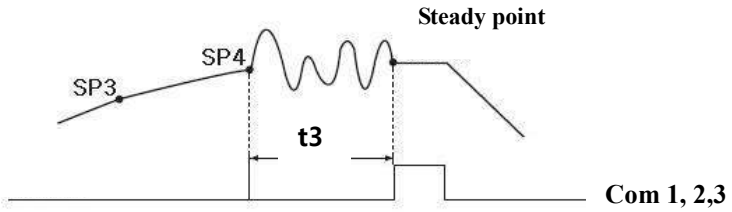
◆ Weighing Mode 3. Checker Mode 1 – Simple Comparison

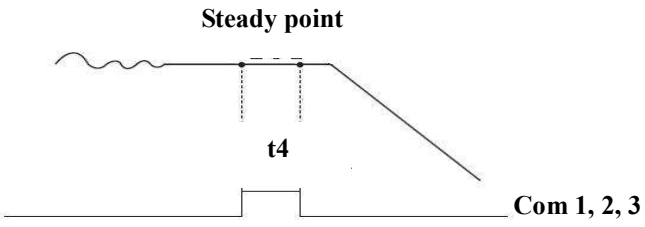


◆ Weighing Mode 4. Checker Mode 2 – Simple Comparison



<table>
<tr><th colspan="4">“Communication Output” delay time(t1) setting (Under F32- 01, F33- 00 setting) when use weighing mode 1, 2 – only for MI-830/850 model</th></tr>
<tr><td>F22</td><td>10</td><td>00
∫
99</td><td>After current weight is reached to FINAL, you can set some delay time of “Comm. output
 

“00” setting : At Steady point, Comm. output
“20” setting : After 2.0sec from Steady point, Comm. output
“99” setting : After 9.9sec from Steady point, Comm. output</td></tr>
<tr><th colspan="4">“STEADY” Judging delay time(t3) setting (Only for F21-03 : Checker mode 1) – only for MI-830/850 model</th></tr>
<tr><td>F24</td><td>10</td><td>01
∫
99</td><td>After current weight is reached to each set point, you can set some delay time of “STEADY”.
 

“00” setting : At Steady point, FINISH relay output
“20” setting : During 2.0sec, hold “Steady” relay
“99” setting : During 9.9sec, hold “Steady” relay</td></tr>
<tr><th colspan="4">“STEADY” Judging “ON” time(t4) setting (Only for F21-03 : Checker mode 1) – only for MI-830/850 model</th></tr>
<tr><td>F25</td><td>10</td><td>00
∫
99</td><td>After current weight is reached to each set point, you can set some delay time of “STEADY”.
 

“00” setting : During the weight reaches to “Empty Range”.
“20” setting : During 2.0sec, Relay will be on.
“99” setting : During 9.9sec, Relay will be on.</td></tr>
</table>

■ **Communication Mode setting**

Parity Bit selection Mode			
F30	●	0	No Parity
		1	Odd Parity
		2	Even Parity
Serial Communication Speed selection			
F31		0	115,200bps
		1	76,800bps
		2	57,600bps
		3	38,400bps
		4	28,800bps
		5	19,200bps
		6	14,400bps
	●	7	9,600bps
		8	4,800bps
		9	2,400bps
DATA Transference Mode selection (Under F32-00, F35-00 setting, only)			
F32	●	0	Stream Mode : Weighing Data will be transferred continuously.
		1	Finish Mode : When Finish Relay output, only 1 time transferred.
DATA Transference Method selection			
F33		0	Simplex Mode / Stream Mode
	●	1	Duplex Mode / Command Mode
		2	LCD Mode
		4	External Display Mode
Equipment No. setting			
F34	01	01 ∫ 99	Equipment No. setting with No. key. (01 ~99 settable)
DATA Transference Format selection			
F35	●	0	Standard Format 1.
		1	Standard Format 2
BCC Selection Mode			
F36	●	0	BCC not use
		1	BCC use

Data Transference count setting			
F37		0	About 40 times/sec
		1	About 30 times/sec
		2	About 20 times/sec
	●	3	About 15 times/sec
		4	About 10 times/sec
		5	About 5 times/sec
		6	About 3 times/sec
Weight Unit selection (Communication)			
F40	●	0	kg
		1	g
		2	ton
Average Display setting			
F53	●	0	Not Use
		1~99	Use (99setting : average display will be a little bit slow)
Steady LED Status Lamp Delay time setting			
F54	●	0	Not Use
		1~99	Delay during 0.1 ~ 9.9sec, and LED lamp will be ON.
Tension and Compression setting			
F55	●	0	Not Use (JP1 switch OFF at main board)
		1	Use (JP1 switch ON at main board and then must be re-calibration)

■ **Other Setting**

EMPTY Range setting		
F80	X.X.X.X.X.X. (0.0.0.0.1.0)	You can set “EMPTY” Range. Within set range, indicator will not display current weight and just display “Zero”. “0.000” setting : When Net Zero, “Zero” status lamp and Near Zero relay will be output. “0.190” setting : Within 190, “Zero” Status lamp and Near Zero relay will be output.
Zero Display Range		
F81	X.X.X.X.X.X. (0.0.0.0.1.0)	Zero display range setting If you set 50 as a set value, under 50 weight value will be displayed as Zero. Display will show “0” to “51” directly.
Zero Deduction Value Setting		
F82	X.X.X.X.X.X. (0.0.0.0.1.0)	Display (current weight – set value) on the display panel. If you set 50, current weight is 100, then 50will be displayed.
Max. Analogue Output Value setting		
F83	X.X.X.X.X.X. (0.0.0.0.1.0)	At the set weight value, analogue output will be maximized. Ex.) Set 5000, then a weight reached 5000 → 20mA or 10V will be output But if you need just 3000 of Max. capa, you can input 3000 through this function, then the weight reached 3000 → 20mA or 10V will be output
Simulating Calibration Standard Value		
F85	X.X.X.X.X.X. (0.0.0.0.1.0)	Check the simulating Calibration standard value. If the value is empty, you can not use Simulating Calibration function.
Span Calibration Value		
F89	X.X.X.X.X.X. (0.0.0.0.1.0)	Check the Span Calibration value. Or set the new value.(Authorized personnel only)

Chapter 7. Interface

1. Rs-232C (Standard Installed)

RS-232C Serial Interface is sensitive/weak for electric Noise.

So, please isolate with AC power cable and use shield cable to reduce the electric noise effect.

1-1. Connection

MI 800 Series Indicator

2 RXD ---------- Pin3 TXD

3 TXD ---------- Pin2 RXD

4 GND ---------- Pin5 GND

PC(D-Sub 9Pin)

MI 800 Series Indicator

3 TXD ---------- RXD

4 GND ---------- GND

Remote Display

1-2. Signal Format

①. Type : EIA-RS-232C

②. Communication Method : Half-Duplex, Full Duplex, Asynchronous

③. Serial Baud Rate : Selectable

④. Data Bit : 8(No Parity mode, only)Bit.

⑤. Stop Bit : 1

⑥. Parity Bit : Non, Even, Odd (Selectable)

⑦ Code : ASCII

1-3. Data Protocol (Data Format 1. – Total 18byte)

		,			,				K	g	CR	LF

Header1 Header2 Data(8) unit

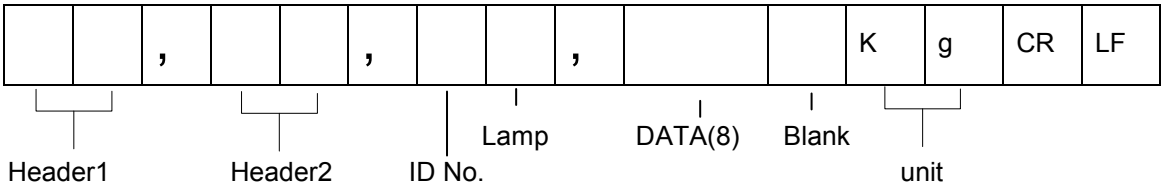
▶ Header 1
- OL : OVER LOAD or UNDER LOAD
- ST : Weight Stable
- US : Weight Unstable

▶ Header 2
- NT : Net Weight (Without TARE Weight)
- GS : Gross Weight (With TARE Weight)

▶ DATA(8) Symbol(1) , Decimal Point(1) , Weight (6) = total 8BYTE, like +000.190
- 2B(H): "+"PLUS
- 2D(H): "-"MINUS
- 2O(H): " "SPACE
- 2E(H): "."Decimal point

▶ **UNIT**
- Kg , g

1-4. Data Protocol (Format 2 – Total 22byte)



▶ Header 1
- OL : OVER LOAD or UNDER LOAD
- ST : Weight Stable
- US : Weight Unstable

▶ Header 2
- NT : Net Weight (Without TARE Weight)
- GS : Gross Weight (With TARE Weight)

▶ ID No. : Function 34 setting (Default No is 1)

▶ Lamp : Status Lamp Condition

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
1	Stable	1	Hold	Print	Gross	TARE	Zero

▶ DATA(8) Symbol(1) , Decimal Point(1) , Weight (6) = total 8BYTE, like +000.190
- 2B(H): "+"PLUS
- 2D(H): "-"MINUS
- 2O(H): " "SPACE
- 2E(H): "."Decimal point

▶ **UNIT**
- Kg , g

2. Rs-422 Serial Interface (Option)

RS-422/485 serial interface is more stable for electric noise effect compare with other communication method, using electric current difference.

But, install isolated place from Power cable or other electric cables and wires, and please use shielded cable for better performance.

Recommendable communication distance is about 1.2km.

2-1. Connection

MI 800 Series Indicator

6 RXD+ ---------- TXD+

7 RXD- ---------- TXD-

8 TXD+ ---------- RXD+

9 RXD- ---------- RXD-

PC(D-Sub 9Pin)

2-2. Signal Format **(As Same as "Rs-232C Serial interface)**

①. Type : EIA-RS-232C

②. Communication Method : Half-Duplex, Full Duplex, Asynchronous

③. Serial Baud Rate : Selectable

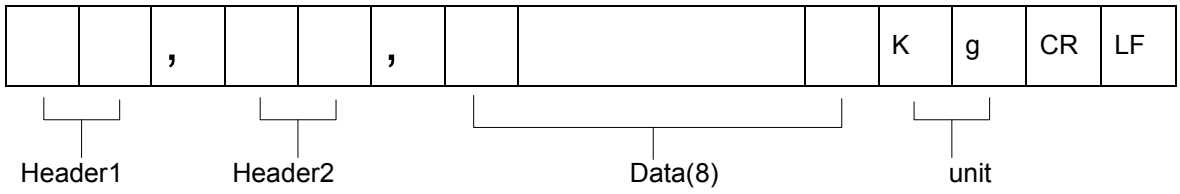
④. Data Bit : 8(No Parity mode, only)Bit.

⑤. Stop Bit : 1

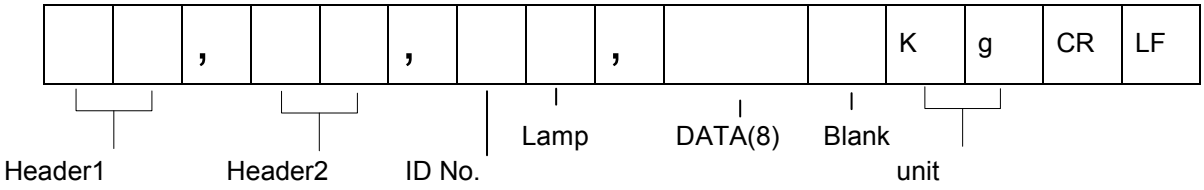
⑥. Parity Bit : Non, Even, Odd (Selectable)

⑦ Code : ASCII

2-3. Data Protocol (Data Format 1. – Total 18byte) **- As same as "Rs-232c Serial Interface**



2-4. Data Protocol (Format 2 – Total 22byte) **- As same as "Rs-232c Serial Interface**



▶ COMMAND MODE

1. READ COMMAND [Start(STX), End(ETX), Succeed(ACK), Failed(NAK)]

PC→Indicator Format	☺01RSNO♥ (ASCII) 02 30 31 52 53 4E 4F 03 (HEX)	Serial No.
Response from Indicator	☺01RSNO0000000♠♥ (ASCII) 02 30 31 52 53 4E 4F 30 30 30 30 30 30 06 03 (HEX)	

PC→Indicator Format	☺01RCNO♥ (ASCII) 02 30 31 52 43 4E 4F 03 (HEX)	Code No.
Response from Indicator	☺01RCNO0000058♠♥ (ASCII) 02 30 31 52 43 4E 4F 30 30 30 30 35 38 06 03 (HEX)	

PC→Indicator Format	☺01RPNO♥ (ASCII) 02 30 31 52 50 4E 4F 03 (HEX)	Part No.
Response from Indicator	☺01RPNO19♠♥ (ASCII) 02 30 31 52 50 4E 4F 31 39 06 03 (HEX)	

PC→Indicator Format	☺01RTAR♥ (ASCII) 02 30 31 52 54 41 52 03 (HEX)	TARE weight value
Response from Indicator	☺01RTAR000758♠♥ (ASCII) 02 30 31 52 54 41 52 30 30 30 37 35 38 06 03 (HEX)	

PC→Indicator Format	☺01RCWT♥ (ASCII) 02 30 31 52 43 57 54 03 (HEX)	Current Weight value
Response from Indicator	☺01RCWTSTNT+00027.6kg♠♥ (ASCII) 02 30 31 52 43 57 54 53 54 4E 54 2B 30 30 30 32 37 2E 36 6B 67 06 03 (HEX)	
Remark	STX(1) ID(2) Command(4) Status1(2) Status2(2) Symbol(1) Weight (Include decimal point)(7) Unit(2) ACK(1) ETX(1) = Total 23 BYTE	

PC→Indicator Format	☺01RSP1♥ (ASCII) 02 30 31 52 53 50 31 03 (HEX)	Low (SP1) DATA
Response from Indicator	☺01RSP1001000♠♥ (ASCII) 02 30 31 52 53 50 31 30 30 31 30 30 30 06 03 (HEX)	

PC→Indicator Format	☺01RSP2♥ (ASCII) 02 30 31 52 53 50 32 03 (HEX)	High (SP2) DATA
Response from Indicator	☺01RSP2002000♠♥ (ASCII) 02 30 31 52 53 50 32 30 30 32 30 30 30 06 03 (HEX)	

2. WRITE COMMAND [Start(STX), End(ETX), Succeed(ACK), Failed(NAK)]

RxD & TxD	Transfer & Response display	Command
PC→Indicator Format	☺01WTAR♥ (ASCII) 02 30 31 57 54 41 52 03 (HEX)	TARE input
Response from Indicator	☺01WTAR↕♥ (ASCII) 02 30 31 57 54 41 52 06 03 (HEX)	
PC→Indicator Format	☺01WTRS♥ (ASCII) 02 30 31 57 54 52 53 03 (HEX)	TARE RESET
Response from Indicator	☺01WTRS↕♥ (ASCII) 02 30 31 57 54 52 53 06 03 (HEX)	
PC→Indicator Format	☺01WZER♥ (ASCII) 02 30 31 57 5A 45 52 03 (HEX)	ZERO input
Response from Indicator	☺01WZER↕♥ (ASCII) 02 30 31 57 5A 45 52 06 03 (HEX)	
PC→Indicator Format	☺01WSNO000058♥ (ASCII) 02 30 31 57 53 4E 4F 30 30 30 30 35 38 03 (HEX)	Serial No. Change
Remark	STX(1) ID(2) **Command**(4) S/N(6) ETX(1)	
Response from Indicator	☺01WSNO↕♥ (ASCII) 02 30 31 57 53 4E 4F 06 03 (HEX)	
PC→Indicator Format	☺01WPNO19♥ (ASCII) 02 30 31 57 50 4E 4F 31 39 03 (HEX)	Part No. Change
Remark	STX(1) ID(2) **Command**(4) **P/N**(2) ETX(1)	
Response from Indicator	☺01WPNO↕♥ (ASCII) 02 30 31 57 50 4E 4F 06 03 (HEX)	
PC→Indicator Format	☺01WCNO000058♥ (ASCII) 02 30 31 57 43 4E 4F 30 30 30 30 35 38 03 (HEX)	Code No. Change
Remark	STX(1) ID(2) **Command**(4) Code(6) ETX(1)	
Response from Indicator	☺01WCNO↕♥ (ASCII) 02 30 31 57 43 4E 4F 06 03 (HEX)	

PC→Indicator Format	☻01WHOL♥ (ASCII) 02 30 31 57 48 4F 4C 03 (HEX)	Hold input
Response from Indicator	☻01WHOL♣♥ (ASCII) 02 30 31 57 48 4F 4C 06 03 (HEX)	

PC→Indicator Format	☻01WHRS♥ (ASCII) 02 30 31 57 48 52 53 03 (HEX)	Hold RESET
Response from Indicator	☻01WHRS♣♥ (ASCII) 02 30 31 57 48 52 53 06 03 (HEX)	

PC→Indicator Format	☻01WSTR♥ (ASCII) 02 30 31 57 53 54 52 03 (HEX)	Start(Run) Input (F21 – 02) (PACK MODE)
Response from Indicator	☻01WSTR♣♥ (ASCII) 02 30 31 57 53 54 52 06 03 (HEX)	

PC→Indicator Format	☻01WSTO♥ (ASCII) 02 30 31 57 53 54 4F 03 (HEX)	STOP Input (F21 – 02) (PACK MODE)
Response from Indicator	☻01WSTO♣♥ (ASCII) 02 30 31 57 53 54 4F 06 03 (HEX)	

PC→Indicator Format	☻01WSP1000200♥ (ASCII) 02 30 31 57 53 50 31 30 30 30 32 30 30 03 (HEX)	Low (SP1) set value change
Remark	STX(1) ID(2) **Command**(4) Low<SP1>(6) ETX(1)	
Response from Indicator	☻01WSP1♣♥ (ASCII) 02 30 31 57 53 50 31 06 03 (HEX)	

PC→Indicator Format	☻01WSP2000400♥ (ASCII) 02 30 31 57 53 50 32 30 30 30 34 30 30 03 (HEX)	High (SP2) set value change
Remark	STX(1) ID(2) **Command**(4) High<SP2>(6) ETX(1)	
Response from Indicator	☻01WSP2♣♥ (ASCII) 02 30 31 57 53 50 32 06 03 (HEX)	

3. Analogue Output (0~10V / Option)

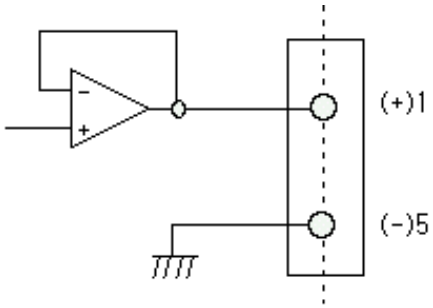
This Option card converts weight value to Analog Voltage output(0~10V) and transfers to external devices(Recorder, P.L.C), controlled by voltage output.

3-1. Specification

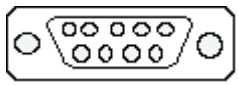
- Output Valtage : 0~10V DC output
- Accuracy : More than 1/1,000

※As we convert Digital signal(1/30,000 accuracy) to Analogue, so the accuracy will be lower than Digital signal

3-2. Circuit Diagram and Pint Connection



9pin D-sub Female connector



1 : HI(+), 5 : (-)

※ This Voltage output is proportioned on weight calibration and outputs 0~10V.

3-3. Adjustment

This output is adjusted as when the weight is “Zero”, output is 0V and When the weight is “Full capacity”, output is 10V.

If you need additional adjustment, please adjust with “VR1(Zero)”, “VR2(Span) on the Analog Output PCB.

※ Remark

This Analog option card converts Displayed weight value(Micro-process data) to analog value on D/A Converter(Digital to Analog converter)

This D/A Converter has Max. 1/4,000 accuracy, so this output is not suitable for high accuracy application, like more than 1/3,000.

For 0~5VDC or 1~5VDC analog output, please inform when you inquiry.

3-4. Output Test

Enter to “TEST” mode and select TEST mode 2(key test).

key input : 4mA or 0V output will be activated from Analogue option Card.

key input : 12mA or 5V output will be activated from Analogue option Card.

key input : 20mA or 10V output will be activated from Analogue option Card.

key input : go to exit for test mode.

4. Analogue Output (4~20mA / Option)

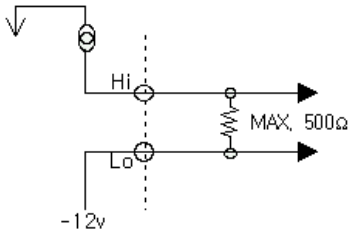
This Option card converts weight value to Analog Voltage output(4~20mA) and transfers to external devices(Recorder, P.L.C), controlled by voltage output.

4-1. Specification

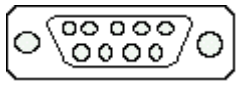
- Output Voltage : 4~20mA output (Max.2~22mA)
- Accuracy : More than 1/1,000
- Temperature Coefficient : 0.01%/℃
- Max. Loading Impedance : Max. 500Ω

※As we convert Digital signal(1/30,000 accuracy) to Analogue, so the accuracy will be lower than Digital signal

4-2. Circuit Diagram and Pint Connection



9pin D-sub Female connector


1 : HI(+), 5 : (-)

※ “LO” terminal is not a “GND”, so this “LO” terminal do not be connected with other “GND” terminal on other devices.

※ This output is proportioned on weight calibration and outputs 4~20mA.

4-3. Output Adjustment

①. This output is adjusted as when the weight is “Zero”, output is “4mA” and When the weight is “Full capacity”, output is “20mA”.

②. If you need additional adjustment, please adjust with “VR1(Zero)”, “VR2(Span) on the Analog Output PCB.

※ Remark

This Analog option card converts Displayed weight value(Micro-process data) to analog value on D/A Converter(Digital to Analog converter)

This D/A Converter has Max. 1/4,000 accuracy, so this output is not suitable for high accuracy application, like more than 1/3,000.

Chapter 8. Error and Treatment

1. TEST Mode

- Using several Test modes, you can test indicator performance.

5-1. Enter to TEST mode

Press

key during 7sec.

Display will show “TEST”, then select each test mode, with pressing

key.

Press

key for the certain TEST mode, and enter to that TEST mode.

After checking or test each mode, press

key to Exit.

Under TEST display, press

key, then enter to Calibration mode.

TEST Modes Guide

TEST 1	- Check Zero Value with Digital Signal.
TEST 2	- Key test Mode or Analogue Option Card Test
TEST 3	- Calibration Mode ☞ Back to the TEST mode, press key.
TEST 4	- Display Test Mode. key to back to the other TEST Mode.
TEST 5	- Relay Test Mode. key to back to the other TEST Mode.
TEST 6	- Input Test Mode. key to back to the other TEST Mode.
TEST 7	- Analogue Value amplification Test. key to back to the other TEST Mode.

※If you installed Analogue Option card, you can test Analogue output test with “TEST 2” mode. (Please check detailed information)

2. Error and Treatment

2-1. Load Cell Installation

Error	Cause	Treatment	Remark
Weight Value is unstable	1). Load cell broken 2). Load cell isolation resistance error 3). Weighing part touches other devices or some weight is on the weighing part 4). Summing Board Error	1). Measure input/output resistance of Load cell. 2). Measure Load cell isolation resistance 3) Check attach point with other devices.	1).Input Resistance of “EX+” and “EX-“ is about 350Ω~450Ω. 2). Output Resistance of “EX-“ and “EX+” is about 350Ω. 3). Isolate Resistance is more than 100Ω
Weight Value is increased regular rate, but not return to “Zero”	1). Load cell Error 2). Load cell connection Error	1). Check Load cell connection 2). Measure Load cell Resistance	
Weight Value is increased to under Zero	Load cell Output wire (SIG+, SIG-) is switched	Make wire correction	
“UN PASS” display	Load cell broken or Indicator connection Error	Load cell Check Load cell connection Check	
	Power was “ON” when some weight is on the load cell?	Remove weight on the Load cell	
“OL” or “UL” display	1). Load cell broken or Indicator connection Error 2). Loading over than Max. Capacity	1). Load cell Check 2). Load cell connection Check 3). Remove over loaded weight	

2-2. Calibration Process

Error	Cause	Treatment
Err 01	When Max.capacity/digit value is over 20.00	Re-input the Max. Capacity, less than 20.00 (Max. Capacity / Digit)
Err 04	Standard weight value is over than Max. Capacity	Re-input Standard weight value with Number keys, under Max. Capacity
Err 05	Standard weight value is less than 10% of Max. Capacity	Re-input Standard weight value with Number keys, more than 10% of Max. Capacity
Err 06	1. Amp. Gain is too big 2. Sig+ and Sig- wire connection error 3. Test weight is not loaded	Check standard weight's weight with set value. If there is difference between set value and real weight, please re-input the value (set value is too small)
Err 07	1. Amp. Gain is too small 2. Sig+ and Sig- wire connection error 3. Test weight is not loaded	Check standard weight's weight with set value. If there is difference between set value and real weight, please re-input the value (set value is too big)
Err 08	Under "F-function" model, set value is "N.A"	Check the correct value and re-input
Err 09	When Y.Y has the value between 3.9 ~ 9.9 at Y.YXXXX as Span value, If standard weight value is less than 10% of Max. Capacity	Change the Max.capacity/digit value (Ex: digit 01 → 05)
Err A	When there is continuous vibration on the weighing part,, indicator can not process calibration any more.	- Find vibration cause and remove - Load cell check - Load cell cable and connecting condition check

WARRANTEE CETIFICATION

This product is passed “MIGUN ST”s strict quality test.

If there is defect of manufacturing or abnormal detection within warrantee period, please contact our Agent or Distributor with this Warrantee certificate.

Then, we will repair or replace free of charge.

WARRANTEE CLAUSE

1. The Warrantee period, we can guarantee, is one(1) year from your purchasing date

2. Warrantee Exception Clause

- Warrantee period is expired.
- Any kinds of Mal-function or defection caused by Modification or Repair without Migun ST’s permission.
- Any kinds of Mal-function, Defection, or External damage, caused by operator
- Any kinds of Mal-function, Defection, caused by using spare part from Non-Authorized Distributor or Agent.
- Any kinds of Mal-function, Defection, caused by not following Warnings or Cautions mentioned on this manual.
- Any kinds of Mal-function, Defection caused by “Force Majeur”, like Fire, Flood.
- Without presentation of this **“Warrantee Certification”.**

3. Other

- Any kinds of “Warrantee Certification” without authorized Stamp is out of validity

.

Manufacturer
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Email : info@miguncorp.co.kr / sales@miguncorp.co.kr
http://www.miguncorp.co.kr

Product	Digital Weighing Indicator
Model	MI-810/830/850
Serial No.	
AUTHORIZED STAMP	